ABSTRACT

An electron beam evaporation source (42) that contains a first thin film material, an electron beam source (44) that emits an electron beam (45) to be used to evaporate the first thin film material by heating, and a resistance heating evaporation source (48) for evaporating a second thin film material by heating using a resistance heating method are arranged so that the electron beam (45) passes through a vapor stream of the second thin film material. Thus, evaporated atoms of the second thin film material can be ionized. As a result, a thin film having improved properties and increased mechanical strength can be formed. Further, since it is no longer necessary to use another device for ionizing the evaporated atoms of the second thin film material, the complication of a configuration and a cost increase can be prevented.